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ABSTRACT

Papers on library services and developments in reading materials for the blind, which were presented at the 1983 International Federation of Library Associations (IFLA) conference, include: (1) "Reading Programs for the Blind and Physically Handicapped in Public Libraries of the Polish People's Republic" by Franciszek Czajkowski (Poland); (2) "Library Services for the Blind in the Federal Republic of Germany (FRG)" by Rainer F. V. Witte (West Germany); (3) "(United Nations Educational, Scientific, and Cultural Organization) UNESCO/IFLA Contract No. 642030: Braille Production in Africa" by Rainer F. V. Witte (West Germany); (4) "The Technology of Producing Tactual Maps and Materials for Textbooks" by Wilfried Laufenberg (West Germany); (5) "Talking Books Libraries in (the) Federal Republic of Germany (FRG)" by Karl Britz (West Germany); (6) "The Blind and the New Technologies: Paperless-Braille and Reading Machines" by Manfred Harres (West Germany); (7) "Thoughts about the Production and Spreading of Braille in Africa" by Hans-Eugen Schulze (West Germany); and (8) "New Technologies for the Blind Reading Community," in which Paul E. Thiele (Canada) describes new developments in talking books, braille, print conversion technology, optical to tactile conversion, optical to speech output, print to braille conversion, radio reading services, and optical print enlargement. (ESR)

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IFLA GENERAL CONFERENCE MUNICH 1983

Division: Libraries Serving the General Public

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Reading Programs for the Blind and Physically Handicapped in Public Libraries of the Polish People's Republic

by

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Reading Programs for the Blind and Physically Handicapped in Public Libraries of the Polish People's Republic Current and Prospective

by

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Today, it is generally accepted that there is a need for literature about the social and physical rehabilitation of invalids and blind and handicapped persons. The authorities of the Polish People's Republic, the pertinent social organizations uniting invalids, the Association of Polish Librarians, and the Section for the Propagation of Reading Programs for Invalids and Physically Handicapped Persons, could include in their activities the reports on their efforts to develop and improve rehabilitation services in their respective organizations.

Braille libraries for the blind have relatively rich traditions, dating back to the times before the Second World War. However, a planned and widespread activity was developed only after that War. It is linked to the operation (since 1952) of the Central Library in Warsaw at the Polish Association of the Blind. Essentially and training-wise, six branch libraries in larger city centers and in nearly twenty libraries within cooperatives, schools and community centers depend on this Central Library in Warsaw.

Public libraries also render services to the blind, although on a smaller and limited scale. Recently these services have begun to increase, especially for the physically handicapped and non-hospitalized invalids.

The increase in special reading programs in public libraries

is relatively recent and so far not properly recognized in Poland (in contrast to reading programs for hospitalized persons). This is why it seems proper to discuss the development of reading programs for the physically handicapped (first part of the Article), and in particular the organization of the Library for the Blind and Physically Handicapped in TORUN (second part).

Anna Jawarska and Zofia Sokol, in their description of activity at the Regional Library for the Blind in Krakow,[1] considered one of the largest establishments of this type in Poland during the years 1948-1951, mention the assistance given to the blind by the City Public Library. This included financial help, in the form of rewards to the volunteer copyists, as well as organizational and technical support in administering the book collections. Library employees as well as readers collaborated in transcribing the books into braille. This was also the time of frequent contacts with Jan SILHAN (1889-1971), the outstanding international social worker in the blind people's movement, Chairman of the Board of Directors of the Provincial Polish Association of the Blind in Krakow, along with Dr. Jozef KORPALA, the then Director of the City Library, who was an outstanding librarian and humanitarian. These names are closely linked with the intellectual movement in Krakow and with the cultural, educational, and rehabilitation programs of Krakow.

New directions in the development of special reading programs resulted from the mass production of books, periodicals, and special editions of newspapers on records and tapes. Under the patronage of "IFLA" (International Federation of Library Associations) and its specialized sections, this movement embraced a majority of countries. In Poland, reading programs increased relatively late, in 1975, when they were

introduced in public libraries for the blind and physically handicapped. This increase is linked to an agreement concluded toward the end of 1975, between the Ministry of Culture and Art and the Board of Directors of the Polish Association of the Blind, concerning the collection and availability of recorded books in public libraries. This official document provides for the acquisition and dissemination of "talking" books. They are produced at the recording studio in the Headquarters of the Polish Teachers Union in Warsaw. Approximately 150 titles are recorded annually for the use of public libraries, predominantly in the field of general education and of belles-lettres. Several are taken from the classic Polish and foreign literature.

How does the implementation of the above-mentioned agreement appear after a period of six years? What has been achieved up to now in the field of library services for handicapped readers? In order to become acquainted with the subject, the Section for the Propagation of Reading Programs for Invalids and Physically Handicapped Persons[2] distributed among regional branches of the Association of Polish Librarians and provincial libraries (a total of 49) a 14-question "Inquiry into the Organization and Activity regarding Talking Books." There was a 79% response. Despite the fact that some replies were incomplete and the subject was treated in an unsatisfactory way, on the whole the survey is a valuable study. At 35 provincial agencies there are organized sections for "Talking" books, frequently including recording studios in musical departments or in libraries. In Torun and Lublin, special technical library branches are operating. In other areas, libraries cooperate with local administrations of the Polish Teachers Association and have placed studios in community centers or in clubs. These libraries carry on library

activity in the strict sense of the word, but some of them also organize educational and training ventures of a typical rehabilitation character.

The libraries have the standard equipment, but there is a lack of technical reading devices and newer electronic and projection equipment which is indispensable to serve the reading needs of invalids. Only a few libraries have at their disposal special booths adapted for reproduction of records and tapes. However, all these libraries have large numbers of cassette players which can be borrowed by readers. Toward the end of 1981, the collection of "talking" books in 35 libraries amounted to 11,263 titles, which amounts on the average to 323 items per province. This number will be slightly increased after adding books purchased for the libraries by social organizations such as the Polish Association of War on Disability, as in the case in Torun. These added books are not registered in the catalog, they are only deposited in libraries.

The average number of blind readers is approximately 145 per province, which means that some 13% of the blind benefit from public libraries.

A positive sign recently observed in our country is the steady increase of funds from the Ministry of Culture and Arts for the purchase of books recorded on tape and of equipment available on the market. However, a serious difficulty in carrying out library services, particularly among people with amblyopia and old persons, lies in a lack of large-type editions; the most recent large-type items are appearing with smaller and smaller print (this happens all over the world!). I think that this problem can be resolved in the near future, because library administrators and the Section for the Propagation of Reading Programs for Invalids and the Physically Handicapped have appealed to competent authorities for the

publication of books in easily readable print.

Polls show that there is a growing awareness of the need to develop reading programs for the blind and physically handicapped. This subject is included in courses offered by public libraries and other social organizations (Torun, Gdansk, Przemysl, Lodz). Working contacts are widening not only with the Polish Union for the Blind, but also with the Polish Union for the Deaf, the Polish Association of War on Disability, and the Union of Pensioners and Retirees. There is also an increase in the number of recording studios in sccial assistance homes and in subprovincial libraries; for example, 15 in Katowice, 7 in Gdansk, 6 in Poznan, 5 in Torun, 3 in Szczecin.

Prospectively, one has to consider the need to create a new organ (or assign to an existing library this responsibility) to stimulate special reading programs, coordinate interlibrary activities, and create central catalogs which would render information and services on a national scale.

Now let us devote a few sentences to the special library branch for the blind and physically handicapped which operates at the Provincial Public Library and City Library in Torun. This library evolved in 1982 from the already existing library studio. Situated on the ground floor of a historic apartment house in the center of the town, it has relatively spacious premises with easy access (no stairs). It has the standard library equipment. The collection consists of 390 talking book titles, catalogs are being prepared in print and braille, and the collection of rehabilitation and typhlological literature is under way.

In the near future, two booths will be installed with equipment for reproducing cassettes and records. Funds to buy "talking" books and

tape recorders and other equipment are increasing.

For the last two years, the Library and the Branch of the Polish Teachers Association in Torun have hosted a Discussion Club on "talking" books, appointed at the behest of blind literature lovers and by librarians interested in this kind of activity. The work of the Club, which includes several dozen people, is managed by a five-person Program Council, elected from among the readers. One of the Council members is the Head of the Library, a person of great sensitivity and warmth, with professional experience and social involvement, who acts as the secretary. The Council shows a great deal of initiative, outlines the program of activity of the Club and the Library, participates in the selection of books submitted for purchasing, prepares the reports of cultural and educational work, pinpoints the titles of books for discussion, and stresses problems of the blind in the sighted environment. The Program Council cooperates with the Central Library of the Polish Teachers Association, the Pedagogical Chair of the Mikolaj KOPERNIK University, the Provincial Board of Directors of the Polish Association of War on Disability, the Management of the Provincial Public Library, and the Board of Directors of the District Association of Polish Librarians. Activities of interest include reviews of literature (new book publications), discussions of books on acceptance of the handicapped, books on the social mobilization of the handicapped, and books on safe environments for the handicapped, meetings with authors, literary and musical events, and exchanges of ideas on rehabilitation and on actual subjects from cultural life. From time to time small groups of a few persons gather to listen to books or poetry readings. At the Club all members have an occasion to present their poetry reading abilities, or musical and story-telling talents. A few weeks ago (in October) there was

a festivity to celebrate the inauguration of the cultural and educational year 1982/1983. The chairman of the Club, Ms. Irena Hajncel, a member of the Association of the Blind and an active reader of long standing of "talking" books, described in warm terms the Library activities. Using her own example and that of her coworkers, she expounded on the role of literature in the rehabilitation process and mentioned certain passages from books to which she often returns in her mind at difficult moments.

In the later part of the celebration, the Chairman of the Section for the Propagation of Reading Programs for Invalids and Physically Handicapped Persons, Mr. Franciszek Czajkowski, brought up the subject of newly published books recorded on tape and mentioned the book of O. Johansen, "Light in Darkness," published in print. A pleasant part of this celebration was the presentation of prizes and diplomas to outstanding readers and to the active Club workers. In the final part of the program the participants (55 in all) listened to poetry with musical accompaniment and a production of blind Polish authors, performed by blind Club members themselves. The above-mentioned events organized by blind people themselves or with the participation of blind people, always take place as a tea party in a friendly atmosphere. There is ample sense of humor and much gratitude toward organizers. In the newsletter of the Library and of the Club we find, for example, the following entry: "This evening (it refers to the New Year's Eve--note of author) made many pleasant impressions on all of us. With these we will return to our homes, wishing that many more similar cultural events, enriching our intellectual lives, be organized." Such a statement depicts the climate accompanying these events, and is one of the evaluations given by the

readers, evaluations which mobilize us to further efforts for the physical and social well-being of persons victimized by life.

F. CZAJKOWSKI

Footnotes:

[1]"Library for the Blind in Krakow." Information and Instruction Bulletin, Krakow, 1981, no. 3/127, pp. 67-74.

[2]It has functioned under this title since 1981. It was previously known as Section of Hospital Libraries.

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LIBRARY SERVICES FOR THE BLIND IN THE FEDERAL REPUBLIC OF GERMANY (F. R. G.)

by

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Library Services for the Blind in the Federal Republic of Germany (GFR).

Librarians from countries of widely different character are represented in the section "Libraries for the Blind" of IFLA. There is one thing they all have in common, though: it is the task of supplying information (in a more traditional sense: literature) to the blind. The choice of the medium for storing the text is of secondary importance.

Different, too, is the legal basis of the definition of blindness. A quite restricted definition is used in the Federal Republic. Laid down in the Federal Law on Social Aid (§ 24) it applies to those persons

> "whose visual acuity is reduced to 1/50 on the better eye" and who "suffer from permanent visual impairments of so serious a nature as to justify their being considered as equivalent to the visual impairments defined above."

(Note: the fraction 1/50 represents a relation of distances: it refers to the fact that objects which can be recognized, albeit with difficulty, by normally sighted persons at a distance of 50 m must be approached at a distance of 1 m in order to be identified by visually handicapped persons.)
(This definition is not valid for West Berlin.)

Different definitions are in use in other German speaking countries. So, a lot of people considered as "legally blind" in the USA would certainly not be entitled to the same distinction and its accompanying privileges provided by the law in the Federal Republic. The one social distinction that marks the legally blind out from other handicapped people is a financial one: they receive an "allowance for the blind". This monthly allowance varies according to the different federal states. It is fixed at a sum of about 750,-- DM, on average, at present, and is intended to help its beneficiary meet the additional expenses caused by his blindness (having to buy braille books, for example, which cost a few times the price of the corresponding inkprint edition).

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We have been lucky to obtain more precise statistical data on blindness, a year ago, when the final report of a study (the Herzog Paper) was published:

> Hans Werner HERZOG and Monika KÜGLE
> "Report on technical aids for the blind"
> Munich: infratest 1982 (ca. 300 pp.)

(The book can be ordered from infratest Gesundheitsforschung, D - 8000 München; catalogue number: 78 489 6 HWH/KU/wd. An edition in contracted German braille has been published by BLISTA.)

According to this study, there were 74,130 blind persons in the Federal Republic and West Berlin, in 1980 (69,910 civilian blind; 4,220 war blind). 68 % of them are persons of 60 plus, 4 % are under 20 years old (the population of the Federal Republic amounted to a total of 61,713 million people, at the time: 1980).
53 % of the visually handicapped are organized in federations or unions, of which three big organizations of self help for the blind must be mentioned here:

- the "Union of Blind Intellectuals/VbGD" (from 1984 onwards: "Deutscher Verein der Blinden und Sehbehinderten in Studium und Beruf e. V./DVBS (i. e. German Union of the blind and visually handicapped with university or professional qualifications) Marburg (Lahn);
- the "Union of the War Blind in Germany" - "Bund der Kriegsblinden Deutschlands e. V./BKD", Bonn;
- the "Deutsche Blindenverband/DVB" - "German Federation of the Blind"- which is the biggest organisation with 15 regional and 260 local groups.

Those of the visually handicapped who are members of organisations enjoy a higher level of information and they constitute the lion's share of those who actually use medialized information sources. It is only natural that the majority of the users of libraries should belong to this group.
In connexion with the organizations of selfhelp the central service facility for the blind in the Federal Republic deserves mention: it is the "Deutsche Blindenstudienanstalt/BLISTA" in Marburg which may be compared

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- with regard to its function - to the (north) American "Perkins School for the Blind" in Watertown, Massachusetts (near Boston).
BLISTA is the first producer of braille books in the Federal Republic or in all German speaking countries, for that matter.

The media which libraries offer for the information of the visually handicapped are well known:
- braille literature (on paper or digitally stored on magnetic tape);
- talking books (open reel or cassette);
- large type books (14 points or larger type);
- "normal" ink print books (read with the help of: closed circuit television or reading machines with voice-/braille output or OPTACON).

Future library services will have to include access to EDP data storage, a path which has been opened up by the "tactile line" (electronically controlled mechanical pins in the order of a Braille character) in the braille terminal.

What services for the visually inpaired are offered by whom, in the Federal Republic, at present? For a better understanding of the problems raised by library work for the visually handicapped let us take a look at the way in which library services are structured, in our country. First of all, there is no centralized, uniform library system where libraries for the blind would have their specific place, because there is no adequate legal basis for such a structure, with the exception of a few initiatives without interest for the matter in question. History is to blame for this: the Federal Republic is a federation of 8 federal states (Schleswig-Holstein, Niedersachsen, Nordrhein-Westfalen, Hessen, Rheinland-Pfalz, Baden-Württemberg, Bayern, Saarland), 2 city-states (Hamburg and Bremen) and (West-) Berlin. The right of decision in matters of culture and education is not with the Federal Government but with the single states or the individual community, as far as public libraries are concerned. Within the range of responsibility of each state, library services are part of the voluntary assignments, so that, in periods of financial difficulties - which seen to have been with us forever - the libraries will be the first to see their budgets cut, as is shown by experience. Seen in this light it is not a bad thing that libraries have been left a certain autonomy.

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On the other hand, it is this very lack of organizational backing on a national level which makes international co-operation a must (in organizations like IFLA, for example).
At present, in the Federal Republic, there are
- 4 braille libraries
- 10 talking book libraries
- 3 libraries offering both, braille literature and talking books.

(For more detailed information please consult the booklet published by the "German Institute for the Blind (BLISTA)" on the occasion of the IFLA conference:

IQUB - Information Sources for the Blind, 46 pp.)

Braille libraries, naturally, were founded first: the "Centralbibliothek für Blinde (Central Library for the Blind)" in Hamburg in 1903, the "Emil Krückman Library" (EKB) in 1916, giving birth later to the "German Institute for the Blind (BLISTA)", the "Büchereien der Blindenanstalt zu Nürnberg (Libraries of the Institute for the Blind at Nürnberg)" in 1918, the libraries of the "Borromäusverein Bonn", of the "Blindenabteilung der Stadtbücherei Köln (Section for the Blind of the Municipal Library of Cologne)", and of the "Süddeutsche Punktschriftbücherei Stuttgart (Braille Library of Southern Germany in Stuttgart)" in the same year; (1933 was the year of the foundation of the braille library in Essen).

The first talking book service in Germany was established as the "Deutsche Blinden Hörbücherei/DBH (German Talking Book Library)" in Marburg in 1954. It had been planned, originally, to remain the only talking book library in Germany, for obvious economical reasons, but in order to preserve their cultural autonomy other federal states soon followed suit with talking book libraries of their own: Nordrhein-Westfalen in 1955, Bavaria in 1958, Berlin, Hamburg, Essen in 1960 and the Saarland in 1962.

A number of libraries offer both braille and talking book services (Bonn, Cologne, Stuttgart). The talking book libraries of the Federal Republic only recently (1983) united to form the "Arbeitsgemeinschaft der deutschsprachigen Hörbüchereien (Working Group of the Talking Book Libraries in German Language)", including

as members those libraries of the neighbouring countries that deal with German language literature.
A central talking book catalogue has been set up at the DBH (Marburg) where the titles are stored on computer. Marburg also takes care of all business with publishing houses (recording rights) and with the representatives of the agency which unites the production and the distribution side of the book trade in Germany, i. e. the "Börsenverein für den deutschen Buchhandel" (Francfort/ Main).- In 1983, we have been able to successfully negotiate with them the extension of lending services to hospital patients and other persons belonging to the group of print handicapped people, thus adapting German lending procedures to international usage (it was through the exchange of information made possible by IFLA that we had become aware of the fact that Germany constituted an exception to international usage and IFLA also supplied us with the necessary arguments for secessful negotiation). Fortunately, we have not been confronted by any copyright problems, so far. However, the format (size) of our talking book cassettes might raise problems of compatibility for unrestricted exchange on an international level, so talks will have to be continued through the intermediary of IFLA.

The books are produced by our own studios, but, depending on offer and quality, titles from commercial talking book producers may be added to our stocks. Lending is done almost exclusively by way of post-free federal mail.

The legal form of German talking book libraries varies. Most of them are private associations, but there are also non-profit making organizations with limited responsibility (e.g. DBH), while some are attached to existing institutions (municipal libraries).

The situation is similar for braille libraries, although they deal with a smaller, albeit constant, number of readers since talking books have come into existence. From the "Herzog study" mentioned above we know that 30 % of the blind prefer listening to tactile reading (6 % only), while only 27 % of the blind are able to read braille.

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In fact, reading ability varies with the age group a blind person belongs to. Braille readers are

71 % of the visually handicapped under 45
67 % of the congenitally blind and those who lost sight early in life
41 % of those who lost sight late in life
7 % of the visually handicapped over 66
3 % of the elderly visually handicapped

As can be seen from these figures, the main target group of library work is the group of the visually handicapped under 45, in particular the young people.

One main difficulty of German braille that the elderly blind find hard to overcome is the widespread use of contracted braille, grade 2. This type of braille uses about 250 contracted forms that have to be learnt and practiced continually. In its present form, it has been in use since 1972. Elderly braille readers, then, with little reading practice find it hard to read books printed since that date. As it is difficult to justify a transcription of the old books into the new braille code, the offer of reading material for the elderly blind is consequently restricted, to a certain point.
The total offer of braille books amounts to about 39,000 titles(precise figures cannot be given due to the fact that the traditional counting of braille volumes has been replaced by the counting of titles. Counting roughly 3 volumes to one title, this will amount to approximately 120,000 braille volumes, which is a figure of startlingly small proportions as compared to the offer of other libraries. The striking nature of this deficiency will be seen more clearly in the light of the fact that the same title is likely to be offered by several libraries.

The number of braille libraries is limited, as well: there are 3 in the Federal Republic of Germany, 2 in the German Democratic Republic, 2 in Switzerland and 1 in Austria, the library of BLISTA being the biggest. BLISTA produces a yearly average of 70 titles in braille that can be purchased by any person. In addition to this, almost all libraries transcribe single copies by hand.

While the "Working Group of Talking Book Libraries in German Language"(Marburg) has set up a union catalogue, there is nothing of the sort for braille books.

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(However, mutual consultations of the three printing houses prevent the production of duplicate copies). A union catalogue of all braille libraries is therefore a desideratum. BLISTA is going to work along these lines, having already catalogued in 1918 and in 1931(supplement: 1936) the stocks of German braille libraries. This tradition will be continued. The creation of the working group of the three braille printing houses may be seen as a first step towards a closer cooperation of braille libraries, because libraries and printing houses are usually run by the same organization, in Germany as well as abroad. In this way, the libraries, too, are members of the "Working Group of Braille Printing Houses(Arbeitsgemeinschaft der Punktschriftdruckereien/APUD)" and, motivated by the need for closer cooperation, the German libraries will soon be joined by other non-German institutions(Switzerland, Austria, the Netherlands).
This, of course, will enlarge the basis for the setting up of a union catalogue. The "Working Group" will have to cope with an important task of standardization when it comes to solving the question of how to offer paperless braille.

Paperless braille refers to the tactile line produced by mobile pins which are electronically operated to form braille characters. Whole page display corresponding to the page of a book has not become available yet. At present, however, those electronical reading devices that are available, are still too expensive, none of them being offered under 2,000.-DM(it is true, though, that these reading devices, like cassette players, will need some source of electricity thus making the reader dependant upon its availability). Books of the kind that can be read by these machines (they may take the form of cassettes or floppy discs) do not exist, yet, as the manufacturers of electronical reading machines (hardware) have not been able to standardize their recording procedures(format, program, carrier medium, etc.). For this reason, paperless braille(software) is produced neither by commercial producers nor by libraries.

Finding a solution to this problem of incompatibility will be one of the main tasks for the immediate future, on a national as well as on an international level, and the "Section of Libraries for the Blind" of IFLA will have to play an important role, here.

There are no libraries dealing specifically with large print publications, as large print is not part of the services offered by the libraries for the blind, in the Federal Republic. A few public libraries, however, will list their large print stock in a special catalogue or will shelve all their large print books together.

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There is yet another way in which ink print libraries may meet the needs of the visually handicapped. Any kind of print can be enlarged to any size, on a CCTV. These sets, however, demand a certain amount of additional service. They have to be housed, they have to be maintenanced, new readers have to be instructed on how to use them and there has to be some sort of supervision to prevent unauthorized use.(CCTV sets can be found in the municipal library in Francfort/Main and in the reference library of BLISTA).

Similar problems characterize the use of direct reading devices(Kurzweil). Here, the open book is put on a glass-plate, just as for photostat copying, where it is read by a camera. The printed matter is transmitted to the reader by synthetic speech(Kurzweil system) or by a tactile line (AEG system), according to the system used. To my knowledge, direct reading machines have not been used yet, in the Federal Republic, although the Kurzweil machine(KADEM) is accessible in a number of public libraries in the United States(where librarians would be pleased to see it used more intensively).

Another machine for the transfer of optical information into tactile information functions by outlining the inkprint letters with the help of vibrating pins. A machine of this type(OPTACON) is put at the disposal of readers at the library of the University of Bremen. These machines being portable, readers could eventually take their own machines to the library.

No studies have been published so far on the question to what extent these technical reading devices are being used by the visually handicapped. Their results may be expected to be rather modest, actually, as handicapped readers are no frequent visitors of libraries, as a rule. They are used to having their reading matter sent home to them by mail. One - technically possible - way round this problem would be the transmission of data from the direct reading machine to the home of the reader by telephone. It will be necessary to overcome this immobility in order to make information sources of the latest technology accessible to the visually handicapped. On principle, all information which is digitally stored in electronical data bases is made accessible to blind people by tactile display(the fact must not be overlooked, though, that a considerable number of systems and terminals have to be made compatible on the software side, first).
For three years, now, field tests on the use of PRESTEL(BTX) have been conducted in the Federal Republic in Berlin and Düsseldorf, including blind users of telephone services. The first German libraries to obtain a PRESTEL-terminal were the Staatsbibliothek Preußischer Kulturbesitz(1983) and the Amerika Gedenkbibliothek(1981). For quite some time, now,

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it has not been uncommon for research libraries to be linked to data bases. The link with law data base JURIS, which is of special importance to the visually handicapped, is just being worked on.

(For completeness' sake it ought to be mentioned that libraries can offer the visually handicapped reader literature via PRESTEL over the telephone network. The university of Hagen offers home study courses via PRESTEL, for example).

Tactile material like relief maps, as far as it has not been published in books, is offered by BLISTA/EKB(Marburg) alone, to my knowledge. The production and the use of material in special format(teaching material) is limited to the schools for the blind in the Federal Republic. There is no central supplier, except for the production of BLISTA publishing department. The "Mosel Catalogue"(so called after its author) constitutes an attempt at setting up a special format union catalogue. With the help of this catalogue, institutions may request copies directly from the schools which stock them. The procedure is complicated enough to deserve improvement.

As to the reading habits of the visually handicapped, we might gain a few insights from the Herzog Paper mentioned earlier:
The reading habits of the visually handicapped are determined by individual interest(usually related to schooling) and financial possibilities. Other determining factors have to be taken into account, though, for interest alone, great as it may be, is of no avail
- if there is a limited offer in a particular field of interest for blind people(braille or talking books),
- if there is no braille or talking book literature and the blind person has nobody to read the text to him,
- if there are appropriate books in braille but the interested person cannot read braille,
- if the interested person ignores where braille and talking book literature can be obtained.

With regard to the contents of their reading, the interests of blind people are the same as those of sighted people: factual literature, instructive and entertaining literature. As to the presentation of the material, 46% on average of the visually handicapped prefer to have it read to them, 41% prefer listening to cassettes, while tactile reading comes last(19%). Aside from individual preference another determining factor will be the form in which interesting literature is made available(magnetic tape, braille). Young people and persons who lost their sight later in life use talking books more often, whereas persons who were born blind or who lost their sight early in life make more intensive use of braille.
Libraries for the blind were put to shame when the study noted(for 1980) that 38% of the visually handicapped had no idea of the existence of talking books! The "Year of the

Handicapped" and continuous efforts on the part of the libraries will have changed this state of affairs, in the meantime.
Nevertheless, it remains a great challenge to librarians for the blind to answer the questions of

- how to increase the offer of reading and information material
- in which form it would be most useful to make the existing literature available to the readers
- what measures have to be taken in order to reach the greatest number of visually handicapped
- where do libraries for the blind see their place within the library structure of the Federal Republic - do they wish to remain relatively well functioning autonomous institutions or do they prefer to become subordinate sections of municipal libraries?

No matter what will be the answers, they have to make sure that the outcome will be the best possible service for the blind, satisfying the specific needs of the readers we are committed to.

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Institut Gesundheitsforschung
München 1983
784896 HWH / Kulwa

2 Soziodemographische Faktoren

- Das Durchschnittsalter der Sehgeschädigten beträgt 63 Jahre. Fast 70 % aller Sehgeschädigten sind 60 Jahre und älter. In dieser Gruppe der Sehgeschädigten befinden sich zu ca. 60 % ältere Frauen.

- 79 % aller Sehgeschädigten sind oder waren verheiratet. Der Familienstand ist dabei stark abhängig vom Zeitpunkt der Erblindung. Geburts- und Jugendblinde sind deutlich häufiger nicht verheiratet als Spät- oder Alterserblindete. Als Ehepartner kommen für Geburts- und Jugendblinde offenbar häufig ebenfalls Sehbehinderte in Frage.

- Das Bildungsniveau der Sehgeschädigten ist uneinheitlich. Während es bei den Spät- und Altersblinden in etwa dem der Normalbevölkerung entspricht, erreichen Geburts-, Früh- und Jugendblinde nur schwer höhere Bildungsabschlüsse.

- Ob und in welchem Ausmaß ein Sehgeschädigter berufstätig ist (14 % aller Sehgeschädigter sind derzeit berufstätig bzw. 32 % der Sehgeschädigten im Alter von 19 - 65 Jahren), ist abhängig vom Zeitpunkt seiner Erblindung. Bei Spät- und Alterserblindeten führt die Behinderung oftmals zu einer Aufgabe der Berufstätigkeit, während Geburts- und Früherblindete im Rahmen spezifischer Sozialisation berufsadäquat vorbereitet werden und häufiger berufstätig sind.

- Das Haushaltsnettoeinkommen Sehgeschädigter liegt deutlich unter dem der Normalbevölkerung, was auch auf die spezifische Alters- und Geschlechtsstruktur zurückzuführen ist.

- 88 % der Sehgeschädigten erhalten nach eigenen Angaben Sozialhilfeleistungen (Blindengeld, Blindenhilfe, Blindenpflegegeld) in einer durchschnittlichen Höhe von DM 655,-- (über die Hälfte der Leistungsempfänger erhalten dabei Leistungen zwischen DM 700,-- und DM 800,--).

- 10 % aller Sehgeschädigten und 20 % aller sehgeschädigten Frauen ab 66 Jahren leben in Heimen. Fehlende familiäre Unterstützung, Mehrfachbehinderungen und ein geringerer sozialer Status (Personen ohne Berufsausbildung, geringes Einkommen) sind die Charakteristika von sehgeschädigten Heimbewohnern.

- Über die Hälfte der Sehgeschädigten (53 %) sind nach eigenen Angaben Mitglied in einem Blindenverband bzw. Blindenverein. Bei den Nichtorganisierten handelt es sich überwiegend um ältere altersblinde Frauen. Strategien zur Erhöhung des Organisationsgrades müssen vor dem Hintergrund dieser Altersstruktur gesehen werden.

- Nichtorganisierte Sehgeschädigte zeichnen sich durch ein deutlich geringeres Informationsniveau z.B. über die Existenz von Hilfsmittelzentralen aus; allerdings muß das Informationsniveau über Hilfsmittel insgesamt als äußerst defizitär bezeichnet werden.

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Division: Libraries Serving the General Public
Section: Libraries for the Blind
D - 3550 Marburg (Lahn), August 17 - 19, 1983

UNESCO-/IFLA-CONTRACT N° 642030

BRAILLE PRODUCTION IN AFRICA

by

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Motto

It can be said that graphic communication is a universal and timeless phenomenon and that written symbols were invented by man to overcome the spatial and temporal limitations of oral symbols. Therefore, literacy, in its most elementary sense, has flourished in every human society.

S. I. A. Kotei:

The Book Today in Africa. Paris: UNESCO 1981

A. Some Preliminary Remarks

The UNESCO/IFLA contract N° 642080 is a further step of this international organisation towards establishing the conditions, based on the ongoing development of alphabetisation, for a better supply of blind people in Africa with information in Braille.
This is also in keeping with the UNESCO-recommandations worked out at the world conference on books in 1982 in London, which say among others:

> "The Congress recommends (the) creation
> "of a reading environment in all types
> "and at all levels of society, (...) and
> "embracing all types of readers including
> "(...) those with poor eyesight."

Although the number of blind persons varies in relation to the source you will take the figures from, nevertheless an alarming increase can be seen in almost every country of this continent.

Here are some figures for the regions suffering most from this phenomenon.

"World Health Organization(WHO)" totals the number of blind people throughout the world with 40 million. 80% of these live in developing countries. Every hour, 80 persons are losing their sight, 60 of them being under 14 years of age. There are villages in Africa, where one out of three inhabitants is blind. 90% of all blind children have the ability but no opportunity for schooling, as no braille material(a.o.) is available.

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These increasing numbers stand against an extremely poor (press-)braille production in the countries themselves and unfortunately there are not enough books coming in from abroad.

B. Studies pursued earlier

I. The approach of Mr. Schulze

Dr. Schulze's own approach has just been described by himself.
The following is a short summary of what was done by the IFLA-group of librarians for the blind.

Valuable insights were also gained from two previous UNESCO-sponsored activities in the last few years, which have thus become determinating for the aims and objectives of the present study.

- 1979 "African Braille Production. A Statistical Review and Evaluation of Countries and Costs" by Marc Mayer & Frank Kurt Cylke (UNESCO contract N° 594560)
- 1980 Seminar on Library Service to the Visually Handicapped in African Developing Countries.- Arusha, Tanzania, 3 - 11 November 1980

Two papers came from this seminar that was organized by Anna Ubostad and Paulli Thomsen:

- The Final report (UNESCO N° PGI - 81/WS/21)
- Supplement to the Report on the seminar

We are lucky to have one of the authors and also a participant of the Arusha-Seminar with us today: Morayo Atinmo and Paulli Thomsen.

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II. UNESCO/IFLA-Projects

1. The Mayer/Cylke-Study

The study had two objectives:
- the identification of those African countries that have the most suitable conditions for operating and maintaining central braille facilities for the nations of the African continent;
- the development of a cost analysis for such braille facilities.

Four major points had to be considered:
- who would benefit from such a project (an elite-minority?);
- the national consciousness of the countries;
- the technical standards of equipment maintenance;
- the language barriers within the nations.

Based on the information and the political situation of 1979 the following countries were recommended:
- Tanzania
- Ivory Coast
- Kenia

The final selection based on expertise, willingness and equipment on hand should be left to a committee of African nations.

As to the cost Mayer/Cylke state:
- press braille is the cheapest production method
- a major cost consideration is the material cost (especially paper)

and they make the final conclusion:

> Perhaps the most significant thing we can determine from the limited information and analysis conducted herein is to say that from a practical standpoint, a handcopied system would be easiest to establish but less efficient and not necessarily less expensive than a press braille facility. The press braille facility is most efficient in terms of mass-production capability and can be of reasonable cost, if second-hand machines are purchased.

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In May 1979 Paulli Thomsen took the following position with regard to the study:
- the distribution in a continent without appropriate "infrastructure";
- the language barriers as a possible source of nationalistic conflicts;
- the priority in planning the production;
- the inflexibility of a centralized system;
- the cost-sharing among those countries participating.

Thomsen finally states:

> Rather than an establishment of a central braille production facility serving a number of countries, I suggest the establishment of braille production facilities for each African country or an improvement of already existing facilities.

2. Braille-Production-Handbook

In close contact to UNESCO - as I think - the Swedish Federation of the Visually Handicapped in Enskede published the book of Barry Hampshire "Establishing Braille Production Facilities in Developing Countries. A Handbook." 1980.

In this useful and informative work figures are given and addresses of suppliers, that will help the authorities and persons in the emerging countries to meet their actual needs on the spot and in this respect computerized braille unfortunately comes last.

This, too, was one of the results of the Arusha Seminar.

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3. The "Arusha Seminar"

From November 3rd to 11th in 1980 in Arusha, Tanzania the UNESCO-sponsored and IFLA organized "Seminar on Library Service to the Visually Handicapped in African Developing Countries" took place.

Here, people from 12 (of the 44) countries concerned discussed among others the supply of Braille to their ethnic groups. They all used Braille but only two countries owned Braille-presses. Transcribing and thermoforming were the methods the other states met the demand for Braille with, three didn't produce at all.
With regard to establishing Braille printing houses the decentralized production predominated.
As advantages of a central press were considered:
- capital costs will be minimized;
- staff costs reduced;
- the press will be fully utilized;
- more potential funds will be available.

The disadvantages to hold against:
- there might be inter-state rivalry for the most powerful positions;
- each country will have its own priorities as to the selection of materials to be produced;
- some countries may be in a better position to afford the import of supplies and spare parts, and will spend more foreign currency for the running of the press than the other countries can afford;
- poor communication between countries may result in unacceptable delays;
- because of a lack of foreign currency, some states may refuse to honour their financial commitments;
- political misunderstandings between the particapating countries may bring the project to a standstill or else the host country may be the main beneficiary.

Some of the recommendations given therefore run as follows:
- "priority should be given (...) to Braille as a medium";
- "Braille (...) facilities should (...) be established in all African countries."
- Precendence should have "those (blind people) in educational institutions".

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The study under way will have to take all these points into consideration.

4. Further publications

Two papers have to be mentioned in chronological order, now. They were prepared for the "IFLA/UNESCO pre-session Seminar for Librarians from Developing Countries" at Leipzig (August 10 - 15, 1981):

- Morayo I. Atinmo:
  Special Problems of Blind Children & Libraries in Africa with Particular Reference to Nigeria.
- P. Osazbe Fayose:
  Factors Reflecting the Reading Habits of some Nigarian Children

Both papers will be taken into account in the present study.

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5. Other events of relevance

Just a few days ago an international conference took place that issued a documentation that will be of great help: the "United Bible Society (UBS)".
- International Conference on Braille Bible Production" (August 10 - 12, 1983) which was sponsored, conjunctively with "Christian Blind Mission (CBM)".

A listing of approximately 300 pages was edited relating to (among others) all braille bibles available. From it we are able to gather a wealth of information about almost every existing braille-code in the world and about the places where braille-texts are prepared - in one way or another.

III. UNESCO/IFLA-Contract

1. The purpose

The aim of the study is an inquiry into the feasibility of setting up unit(s) (word quoted as in the original text) to produce
- Braille editions of books and
- reaching material for the visually handicapped;

that is for: visually handicapped
- children,
- young people and
- adults in Africa.

The languages to be taken into account are
- vernaculars as well as
- foreign languages.

The investigation has:
- to identify and evaluate the facilities for Braille production and should find out, which countries have positive possibilities of producing Braille texts
- to investigate the "status quo" of Braille publishing and to evaluate the estimated amount and type of additional material required
- to analyse the capacity of existing presses and their potential for production expansion

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- to provide practical suggestions and recommendations as to the location, training, staffing and equipment and materials, e. g., required for the creation of unit(s) to serve national or multinational needs, as well as cost estimate for the establishment of the unit(s) and an investigation of possible financing sources.

2. The problems:
- which of the African states should be considered (those bordering on the Mediteranean - Black Africa - Southern African States - states recognized/ not recognized by the United Nations (UN))?
- How to organize the work in such a way as to give the people concerned a say and a right of decision? And how to find personnel able and willing to tackle the job efficiently?
- How to find possible ways of locating and using resources (this task, considered by IFLA as being outside of their responsibility, will certainly be a point of major importance).
- How to fit the activities into a realistic time schedule likely to be kept.

3. Activities until now

A time schedule has been set up ... that unfortunately couldn't be kept. Addresses of organisations, institutions and persons have been collected and filed. Questionnaires have been drawn up and I am waiting for their confirmation by UNESCO, before having them transcribed into Braille for mailing (in both media: ink and Braille). Suggestions for potential members of commissions have been given consideration, first discussions will take place at Munich.

I hope to set up the final time schedule after the 49th council which will then be issued with further details in an intermadiate report to UNESCO via IFLA.

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THE TECHNOLOGY OF PRODUCING TACTUAL MAPS AND MATERIALS FOR TEXTBOOKS

by

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Wilfried LAUFENBERG:

The Technology of Producing Tactual Maps and Materials for Textbooks

(IFLA-Expert-Meeting, August 17th-19th 1983, Marburg/Lahn, German Institute for the Blind -BliStA-)

Deutsche Blindenstudienanstalt e.V.

Ladies an Gentlemen!

Before I start my lecture on "The Technology of Producing Tactual Maps and Materials for Textbooks", I should like to introduce myself briefly.
My name is Wilfried Laufenberg, I am a psychologist and after doing some research work at Marburg university on the subject of mobility maps for the Blind, for more than two years I am now working for the German Institute for the Blind. One of the main tasks I was trying to solve in these last years was the construction of city-maps for the Blind and Visually Handicapped, as well as the design of tactual graphs and illustrations for textbooks.

I shall try not so much to talk about the psychological aspects of designing maps and graphs but concentrate on the technical and technological aspects. But please allow me one remark about tactual perception and cognition first:

1. We must always remember that the sense of touch is much less sensitive, much more "coarse" so to say than the human eye is. Not only is it necessary to use a larger scale to gain a minimum size of symbols and a minimum distance between separate symbols in order to make them tactually perceptible and easy to discriminate. But also in terms of cognition, we must pay attention to some important differences between vision and the sense of touch. Tactual information must be structured in quite a different way to be easily and correctly understood. A most evident example: colours cannot be used as discriminative factors when constructing tactual materials but must be replaced by factors of height shape and texture of symbols.

The conclusion I want to draw from these facts might be already well-known to most of you but should nevertheless be stressed once more: there is no way of simply transforming or translating visual information into tactual information by a merely technical procedure. Constructing tactual illustrations graphs and maps always involves thinking about w h a t is to be shown by which m e a n s according to the necessities of the tactile sense. These decisions require experience and knowledge - and that means specialists who concentrate on this task.

2. A second point to be stressed is: we should be flexible in choosing the adequate technology for constructing tactual media as this depends on the kind and complexity of information that is to be presented. The range of suitable techniques reaches from quick and easy illustrations, for instance with the mag-stix-kit in mobility-training, to technically complicated silk-screen-printings for book editions and atlases. The number of copies that are to be produced is an im-

portant criterion - besides others - for this decision because the costs involved in different technologies differ as well. Small editions simply cannot be produced by too complicated and expensive means.

3. In the following, I shall try to give you a survey of the main types of technology used for constructing tactual media.
We should first distinguish between those technologies that lead to masters from which thermo-copies can be drawn and others that do not lead to masters but produce originals in large series.

3.1. The most reknowned technique in producing masters for thermo-copying is constructing them by handwork. Glueing diverse materials together (such as the Nottingham Kit for Making Raised Maps contains) is a technique familiar to every mobility trainer and teacher of the Blind, which can also be used when editing large series of tactual materials.
Some more skill is required for working with aluminium sheets or plates, embossing them to produce relief pictures of nearly any shape and height. Pouring them out with plaster you obtain solid masters for many copies.
Besides, masters built with piles of wood can be plastered over to form, for instance, mountains of high relief and afterwards be painted with glue and scattered with diverse textures.
Other techniques to form masters for vaccuum-copying require photomechanical equipment. A technology used at the German Institute for the Blind is producing so-called "Nyloprint" newspaper printing plates: As a first step you need a clean black and white drawing of the later relief that shows every dot line or area that has to become raised in black colour on white ground. This drawing is photographed on a negative film. Magnification or reduction is possible during this step of the procedure. The film negative is then used for exposing a "Nyloprint" printing plate to ultra-violet light that hardens the surface of the plate at those parts where the film negative lets the light pass through. With alcohol (and as a new development even with water) the parts of the plate not exposed to light can be washed away afterwards so that the remaining parts of the plate's surface show those symbols elevated that had been painted black on the original drawing at the beginning of the procedure. Used as a master numberless copies can be taken from such a plate. Of course it is possible to enrich the relief of the plate by additional tactual symbols fixed on it by handwork.

3.2. The second group of technologies concerns ways of producing large series of tactual reliefs without masters by photocopying- or printing-processes.
I am sure that nearly every one of you has at least heard about the newly developped Minolta stereo-copying process which translates black and white drawings into tactually legible reliefs by a special paper used. This paper "blows up", that means expands, when exposed to heat. A normally taken photo-copy on this paper absorbs heat at its blackened parts and reflects heat at its

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white parts, so that the expanding reaction of heat and paper takes place only at the black parts of the copy which then can be recognized tactually.
A comparable technology developped by the German Institute for the Blind is the OTAC-system, even if a technically different way was chosen: A normal photo-copy on normal paper is taken from a black and white original. Differing from the normal photo-copying procedure, the toner on the paper is not fixed by heat. In a second unit of the OTAC-machine the paper runs through, the toner gets mixed with fine quartz powder. In the next step, toner and quartz powder together are fixed to the paper by heat, so that in the end, the quartz sand on the paper is tactually perceptible.
Both, stereo-copying and OTAC-technology, have advantages used to produce simple dot-and-line-drawings but show disadvantages with complicated illustrations: both are only capable of showing symbols of only one standard height, so that no differenciation of height is obtainable for discrimination of symbols.
For purposes of giving complex tactual information, a better solution is silk-screen-printing. As a member of the staff of a research project at Marburg university some years ago, I was lucky to experiment with silk-screen-printings of mobility-maps. Special printing-pastes were used which after being fixed on paper reacted by expanding ("blowing up" so to say) when exposed to heat. So the printing paste became tactually legible. By this procedure, point line and areal symbols of an original black and white drawing could be printed as tactual symbols of sufficient quality. Even printing several times - one symbol on top of another - was possible. In the meantime, necessary further research has been interrupted but is, I hope, to be continued soon.
A second example of printing tactual maps is the Tactile Edition of the Atlas of British Columbia by Ray Squirrel. Here, diverse fine materials are spread into the fresh printing colours resulting in different textures that symbolize differing types of geographical information to the blind user. Unfortunately, I have not yet been able to have a look at this obviously impressive result of cooperation of cartographers, psychologists and technicians.

4. One main aspect shall now be stressed that I have neglected up to now: The importance of colours on tactual maps and graphs. Not only do colours enable the Visually Handicapped to make use of their remaining vision as they read those maps with there eyes, but colours also facilitate communication between normally sighted and blind persons, when dealing with tactual media. All the information presented on a map or graph by tactual symbols should also be readeble by the eye including printed letters that correspond to braille explanations. Thus, producing tactual materials, which are also visually legible using strongly contrasting colours is to be recommended in any case when it is technically possible and feasible from the financial point of view.
As far as the technical aspects are concerned, again there seem to be two main solutions:

4.1. Firstly, tactual media produced as thermo-copies from masters can be coloured by silk-screen-printing the plastic foil before vaccuum-forming it. The only two problems hiding in this procedure are to choose printing clours that stick to the foil permanently and, during the vaccuum-forming process, to arrange the printed foil so that it corresponds exactly to the master. Both problems can be regarded as solved and the German Institute for the Blind has been producing coloured maps since last year.

4.2. Secondly, those tactual media that are directly printed onto paper can easily be designed in different colours during one and the same printing process. Printing with pastes of diverse colours here results in visually legible illustrations that can be enriched by tactual information by "blowing the colours up" by heat or scattering diverging textures onto the freshly printed paper as discussed before. So from one and the same drawing or film, originals can be printed that are legible in both a tactual and a visual way.

5. I am sure that there are many points of interest I did not mention in this survey. These might be questions such as the following:

- Which symbols or which set of symbols is tactually easy to discriminate and recognize?
- Which technology for producing tactual media is to be chosen depending on the type of information that is to be presented?
- What about the costs involved in the different technologies?

and others. I hope that some of these points can be discussed now. For the moment, I shall finish and thank you very much for your interest and attention.

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TALKING BOOKS LIBRARIES IN FEDERAL REPUBLIC OF GERMANY

by

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Karl Britz

Talking Book Libraries in Germany

I. History and organization.

The "talking book" was always an old dream of the blind, at least since technology seemed to offer possibilities for its realization. Wasn't the grammaphone record suitable for recording spoken language as well as music? Indeed, in the thirties and forties talking book libraries were established in North America using the record-disk as their recording medium - however, the rotation speed was reduced in order to increase the recording capacity in comparison to that usual for music. I think it was due to the relatively high costs of this system that this solution to the problem was not accepted either in Germany or in all of Europe. Nevertheless, I do remember that in the early forties some talking disk books could be borrowed at the braille library here in Marburg. It seemed to be that one was waiting for a cheaper and more flexible methode of recording. For instance in 1936 a German newspaper had reported about an optical technique for recording many hours of spoken text on a movie tape. Before it was possible to evaluate this and the other possibilities World War II ceased all such projects. It was in the early fifties that it again became possible to pick up these earlier ideas, but by now quite a number of newer technological developements were also available.

During the war engineers of the German AEG company had developed the magnetic tape recording technique up to the point that it could be used for studio recordings and in the post-war years American manufacturers made it available for home and hobby. In 1949 a braille library in Switzerland started experimenting with recordings on magnetic wire and in 1952 Dr. Carl Strehl, the director of the Blindenstudienanstalt in Marburg, organized a conference with the sole objective of examining all of the technological possibilities available at that time for producing a talking book. The record-disk, however, was not a subject of the discussion, but a similar mechanical technique (Tefifon) which used an endless plastic tape. Finally, another question to be answered was the way in which the magnetic tape technique should be used: either in a system developed especially for this usage, as for example, the closed cassette system developed by the Royal National Institute for the Blind, or simply to use one of the systems being offered by the commercial producers on the general market.

The second way was chosen. The "reader" of the talking book could listen to the tapes on an apparatus which he had to buy for his own use and which he could use, on the other hand, for his own recordings.

The first German talking book library was founded in 1954 here in Marburg and several other libraries followed shortly afterwards in various cities. They organized a federation of talking libraries in Germany which was soon joined by a number of foreign libraries (Austria, Switzerland, France, Holland, Luxembourg and Sweden) also offering German literature to their listeners. At present there are 19 non-profit institutions who belong to the federation and coordinate their work.

This coordination has several aspects:

1. most of these libraries have been founded by a federate state government in order to provide the blind listeners in this state with talking books. Furthermore, to a certain extent some of the libraries have assumed special responsibilities. For example the library in Hamburg also has a larger number of books for children and juveniles whereas the library in Marburg has scientific literature of every kind (including a number of courses to learn a foreign language) and the library in Stuttgart specializes in medical literature (particularly for masseurs and physiotherapists). Three religious libraries (two Protestant and one Catholic) record Bibel texts and other religious literature. The Germany talking library for the blind in Marburg also has the job of providing blind people abroad with German literature.

Thus we send talking books to North and South America, Israel, South Africa, Australia as well as other countries and naturally to the other European countries in East and West.

2. the German talking library for the blind has been commissioned to handle all of the correspondence for the federation, to negotiate with publishers and the association of German book-sellers (Börsenverein des Deutschen Buchhandels) and with public authorities and governmental ministries in all matters concerning talking books. It applies for the permission of the publishers to record books for all of the libraries thus making sure that no one book will be recorded twice.

3. the German talking library for the blind is also responsible for the central catalogue of all book titles available in Germany as well as those recorded in German in the foreign libraries. This also helps in preventing double recordings of any one book. Furthermore, this certifies that every listener can learn if a book has been recorded and if so, where he can borrow it.

4. annual conferences are held in which common problems are discussed, positions are defined on various problems, information on technical progress is passed on and new projects are elaborated.

5. for some time now the federation has also arranged training courses for the technical staff of the libraries in order to teach them how to apply new techniques in their practical every-day work.

6. when a library has recorded a book the title is offered to the other libraries who may obtain a copy or copies of this book at a price covering only the actual costs in producing the talking book, thus a double recording of any one book is not even necessary. Should a listener want a book which is not available at his library, but is available through another library, he can either get the book direct from the other library or his library will get the book for him.

7. up to now the German association of the blind (Deutscher Blindenverband) and the federation have commonly sponsored a competition amongst the speakers to find the best male and female speaker (reader). This will probably be repeated in the near future.

II. Technical aspects.

As I already mentioned 30 years ago the decision was made for the standard magnetic tape system after industry had produced the first home tape recorders. On the one hand in order to be receptive for the continuous technical progress in both the studio and playback devices and, on the other hand, so as not to be dependant on one manufacturer - perhaps even resident in a foreign country. For this reason it was not necessary to provide the listeners with special replay devices. Experience has proved that this concept was very good. Unfortunately it excluded the application of tape-saving devices (for instance Clarke and Smith technology allows recording six tracks of two hours' length on a cassette not much larger than the compact cassette). However, it was possible to make immediate use of all innovations offered on the market be it in the studio recording techniques or in the home recorder sector. The master tapes and copies all corresponded to the international standards which means that they were recorded on a double track system at a speed of 3.75 ips. The tape in use was long-play type (1.5 mils thick) and on six-inch reels, this meant a playing time of one hour per track. During the early seventies the compact cassette arrived upon the market with all of its specific advantages in handling and storing.

Shortly thereafter the federation decided to replace the open reel tape - at least as far as the copies to be lent out were concerned - by these cassettes (as a carrier for the master-copies it is still in use even now). As a respectable number of titles were already available on open reel tape (here in Marburg about 2,500) most of the libraries decided to use the C-120 cassette with two tracks according to the international standards and having two hours of playing time (a few libraries did chose the C-90 cassette). The tape in these cassettes is very thin and said to be very susceptible to damage. Indeed, not every recorder is suitable for replaying these cassettes. Therefore, we made up a list of recorders which had proved sufficiently reliable in practice. Should we be asked by our listeners for advice in purchasing a new recorder we offer them this list of recommended models. Surely, you are not only interested in the fact that we are rather satisfied with the C-120 cassette, but you may wish to hear some statistics about the cassette in actual use. In 1982 the German library for the blind lent out 416,000 cassettes of which 4,640 had to be replaced and recopied (1.11 % which means every nineteenth cassette) because it had been damaged in a listener's recorder. I do not have exact numbers on the cases of damage where the libraries use the C-90 cassette, but values quoted occasionally range between 1.5 and 3 %, at any rate not lower than our damage rate. The explanation just may be that recorders which do not run correctly with the C-120 neither do so with the C-90. So we certainly have no reason to follow the often made suggestions of changing over to the C-90 cassette with somewhat thicker tape, but a 25 % shorter recording time.

III. Licenses.

Finally let me pick up one point already mentioned: the license problem. At the time the federation was founded it reached an agreement with the association of book sellers and with the publishers that before any book could be recorded the permission of the publisher had to be obtained to record this book and that only a limited number of copies could be produced. Furthermore, the libraries guarantied that the talking books would not be used commercially, but only in the sense of the non-profit organizations offering them to their listeners. Up to now the publishers have granted permission without any charges and the other conditions haven't caused relevant problems. Only it did become quite obvious that 30 copies of a book (the number quoted in the agreement) were not sufficient for bestsellers. We succeeded recently in raising this number to 100.

On an "international level" this problem appears more subtle, somewhat modified by the fact that up to now very little interest has been shown in exchanging tape copies with foreign libraries - and this interest will probably never become that large. The groups of persons able and eager to consume foreign language literature in large quantities are to my mind always rather small and there is always the possibility of addressing a talking book library in another country or, should this not be possible, of contacting ones' own library for assistance in obtaining the desired literature. We plan an exchange of tapes with France and Sweden - and I think this should be possible without any dire problems - as well as with perhaps even Spain and South Africa. As far as I am informed no contacts of any kind exist with Great Britain. Proposals to exchange tape copies with American libraries have had, up to now, no consequences. NLS expressed a readiness to furnish the titles we want under the condition that we previously obtain the permission of the publisher for this exchange. But I must confess that we haven't as yet tried to obtain permission - for want of a convincing neccessity. However, I feel happy that the paths leading across frontiers appear to be open for the exchange of talking books and are waiting to be used.

Appendix

Federation of talking book libraries for the blind

		1980	1981
new recordings	inland	2 928	3 037
	foreign	3 186	3 499
	total	6 114	6 536
complete stock	inland	27 961	31 007
	foreign	64 146	67 789
	total	92 107	98 886
copies lent out	inland	489 527	538 821
	foreign	861 080	846 607
	total	1 350 607	1 385 428
tapes, cassettes	inland	2 494 901	2 836 951
lent out	foreign	4 837 458	5 745 050
	total	7 332 359	7 882 001
listeners	inland	37 559	38 294
	foreign	19 755	20 008
	total	57 314	58 302

central catalogue: at present approximately 17,000 titles

increment in 1980: 980 and in 1981: 964

the data are valid for 12 inland and 6 foreign or a total of 18 libraries

IFLA 1983

IFLA Expert-Meeting
Division: Libraries Serving the General Public
Section: Libraries for the Blind
D - 3550 Marburg (Lahn),
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THE BLIND AND THE NEW TECHNOLOGIES:

PAPERLESS-BRAILLE AND READING MACHINES

by

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The blind and the new technologies,
paperless Braille and reading machines

Ladies and Gentlemen,

Before talking to you about new technologies, microprocessors, data-carriers, etc., let's have a look at the brailling of a page with a Braille slate. A sighted person first would read the text. Afterwards the text is mentally translated into Braille by the transcriber and then embossed on paper with the stylus. These three work-steps of text editing translation or code conversion and storage on paper or zinc plates, can be found in Braille production by means of a sheet brailler or any Braille stereotyper. I have placed this retrospective view of familiar production methods at the beginning of the actual topic, since this simultaneous work process, espacially in connection with the use of new technologies in Braille production, is devided into text editing, translation and storage. Today, there exists a wide range of devices and systems for each of these three work-steps, which all take place in or around the computer. In connection with these three work-steps, I would also like to introduce some new devices and show how I imagine these new systems can be combined in the future.

Let me beginning with text editing
You all know that in ordinary large printing houses all texts are entered by means of typewriter keyboards into a computer, which then controls the film setting machines to produce the printer's copies. The edited texts are keyed in again in order to detect quickly any mistakes in spelling or typing. In the ideal case both identical texts are compared via the computer, and deviations are indicated. Some software houses today offer word lists for microprocessor systems, which include the most commonly used words of a language. The entered text is then compared with these word lists by the computer. Thus, it will be no longer necessary to enter the text again for correction purposes, thus the use of these edited texts in Braille production is obvious. Many Braille printing houses already use the text edited in ordinary publishing houses in Braille production. However, these texts are to be edited since they contain the control characters for the film setting machine. Often the text of an inkprint book is changed by hand shortly before duplication, so that the book sold differs from that stored in the computer. Therefore, it would be ideal if one could automatically read the ready inkprint books, page by page, with a reading machine and have the texts stored for further processing. Such reading machines do exist today , but they can read one print type only, and the reading error rate is very low here. One must remember there are over 100 different print types in book printing. Reasearch and development in the field of reading machines has been intensified in the last few years. The problem of automatic character recognition after having first appeared so simple has been found to be very complex, and I think one has enormously undervalued the efficiency of the eye as well as the efficiency of abstraction and combination skills of the human brain. Let me touch on some details regarding this problem. If the material to be read has been written with a good typewriter, the state of engineering allows the machines offered to read the texts without any mistakes. Every character of the material is marked cleanly, and there is clear character spacing called "white way" between the characters. Character spacings are not always included in normal book printing. So it may happen that a reading machine recognizes an O followed by an L as a D. Or an I and an N are contracted to an M. A human being looks at such stuck together characters in context and therefore has no difficulty in reading a word as a whole.

Without such additional test criterions such character combinations still are not rejected by the machine as illegible characters. The problem presents itself from the other side in the case of characters which are not fully printed out. For instance, a T is read as an L or an M as an N. In order to reach statisfactory results here, the machine must be designed in such a way that it has the capacility to recognize the characters from the context. This is easy to describe, but I think it will need a further time for research and development.

Switching to another topic now, we will discuss the texts after they have been stored in the computer. Now they can be translated into Braille by means of a computer program. Such programs are available today in many languages for Braille grade I or II. The extent and the complexity of these translation programs depend very strongly on the rules of contraction for each language. Even the complex German Braille has programs via microprocessor systems. Thus, in the near future blind people will be able to produce their contracted Braille using personal computers. This work-step has been so often tested today that in future new technologies will only increase the speed of translation.

After the translation run has been accomplished. Braille is stored in the computer. In order to make it accessible to the blind it is possible either to use devices for the blind via "on-line" connection directly to the computer, or to store Braille on data-carriers to control then production machines, such as the high-speed embossers or reading machines. The control of a production machine via a data-carrier prepared by a computer is called off-line operation. Before entering into further details regarding on-line and off-line operation, I would like to dwell a while on the devices which are controlled directly by the computer or via data-carriers. There exist today fully automatic embossing machines or high-speed embossers in many Braille print shops, which print out the stored Braille. In addition, there are computer terminals available which have been improved for use by the blind, using a tactile line or a synthetic speech output. I am sure that in many places in the world even displays are being developed, which can represent the contents of a screen terminal in tactual form. Also, there are low priced electronic Braille devices available on the

market or being developed, which enable the blind or to receive Braille print-outs from any computer.
Let me return once again to on-line operation.
We know today of thousends of cases where computer users are connected with a computer via the telecommunication network and via satellite. In Europe, the state of engineering also allows one to read back special data from large USA data banks regularly. Strictly speaking, it is unnecessary to say that the same is also possible with stored Braille. In the case of off-line operation, transportation of data is naturally simple too. That is to say, a Braille book with approximately 400 pages can be stored on a C90 music cassette. These data-carriers also have an excellent archival quality.

Ladies and Gentlemen, I have been talking to you about text editing, automatic translation, on-line and off-line operation systems which, in contrast to conventional Braille production, seem to be very complicated, some time-consuming and costly, meaning they are unsuited to take the place of well-proven and already introduced systems. In spite of this I can see the possibility of integrating combinations of the systems described in Braille production for those countries which in the future will have telephones, personal computers, videotexts, teletexts, etc., belonging to the standard of living. Let me explain.
The intensive use of new technologies in the educational and vocational field of the blind will strongly increase the need for specialized literature for the blind and rapidly reduce the number of copies at the same time. As a result of this, Braille books will become very costly. Then the point in question will be whether Braille books should be filed on shelves in a Braille library, or whether space-saving data-carriers only will suffice allowing a copy to be produced on a high-speed printer if necessary.

Another aspect, which should be discussed here is in connection with the technical possibilities, the funds available for providing blind people with special devices are shrinking. As a result of this, the manufacturers of special devices for use by the blind have to use those low-priced mass produced devices,

which are originally intended for sighted people and then fitted with a tactile line, a whole page display or synthetic speech output for use by the blind. Cince these devices are considerably lower-priced, compared with those commercially available today, they will also more be widely disseminated, as young blind people grow up with these technologies. I think, with a little imagination you will agree with me that in the future, literature may be offered to blind people as follows:
A blind person would like to borrow a book which is not available in Braille. He calls a central library, the book is available there in inkprint. There is no data-carrier on which the same book is stored. The book can be read in library by means of an automatic reading machine. The data edited in the library's computer are then entered into the blind person's personal computer via telephone. The blind person can get the text translated into Braille grade II with his personal computer. He first reads the book on his tactile display. Then he can print the whole book or parts of it on his electric sheet brailler.

Ladies and Gentlemen. I intentionally have chosen a very linear way to outline things in this topic area. I hope to have clearly pointed out the most important aspects. Naturally, their remain "detail" problems to be worked out, but nothing that cannot be solved in the future.

Thank you for your attention

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THOUGHTS ABOUT THE PRODUCTION AND SPREADING OF BRAILLE IN AFRICA

by

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Marburg 1983

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Thoughts about the production and spreading of
Braille in Africa
Paper prepared for the conference of IFLA
Section of Libraries for the Blind
Marburg, August 18th, 1983

Ladies and Gentlemen,

I have been reading books from Braille libraries since my childhood, at first encouraged by my parents and school, who also helped me choose the right books, but later I needed less and less encouragement from others. Since then, I have always regarded the heads and staff of lending libraries as my good friends. So, I am happy to have the opportunity today of thanking you as representatives of all those who have supplied me with books in the course of my life and ensure that new books are constantly printed or transcribed into Braille or read on cassette.

The first book that I did not borrow from my school library but had sent from a central Braille lending library was one by Stanley, a book of which I unfortunately only know the title in German. It describes how the author trekked through Africa to look for Livingstone and how he found him in the end. It must have been 1935 when I read this book. At that time, I could not foresee that, fourty years later, I would be standing at the memorial to this same Livingstone in Blantyre. Blantyre - I do not mean his birth-place of the same name in Scotland, but the town in Malawi named after it. This country is affectionately called by its inhabitants "The Warm Heart of Arfrica". And so, I am in the middle of the continent which Livingstone dedicated his whole life to. What is more important for me in this story is that it was right here that I got and read my first Braille book produced in Africa. It had been transcribed in Montfort College, run by the Dutch Brethern, by a future African teacher of the blind into Contracted English Braille and had been duplicated on foil. From it, I very quickly learnt about almost all the problems which exist in selecting, producing and spreading books in Braille in Africa.

In which language should they be produced? In a European one like English or French, which is still the official and therefore also teaching language in many countries? But this is usually not the language in which people think and talk to each other. Should we therefore rather produce in the national language? But there are often several of them, sometimes even many of them, in the same country. Some are promoted, while others are suppressed. That can change according to the government in power. And for most of these African languages there is no Braille alphabet at all. Or there are only very few ink-print books in a language in which the blind learn to read and write in school. Or a language is still in a stage of development: Diacritical signs, which seem to be indispensable today and would therefore also be represented in Braille, will perhaps be considered superfluous tomorrow. This is all relatively insignificant for ink-print books. A book, old-fashioned in its spelling, that nobody wants to or should read any more, is simply re-printed. Or an English one is replaced by a native one. These costs are usually acceptable, especially as more and more people are learning to read, the hunger for books is fortunately growing and the editions can therefore get bigger and bigger. On the other hand, you yourselves know how expensive it is to print a new edition of a Braille book. Nevertheless, you can hardly hope that the blind would be prepared to continue to make do with old-fashioned books. Take tone marks and nasalization signs as an example. The first are often represented by dots 4 or 5, the latter by dot 6. They precede the vowel which they are supposed to modify. Nasalization and tone changes can occur at the same time. So, you have in Braille vowels with preceding dot 4, dots 4 and 6, dot 5, dots 5 and 6, or dot 6. This slows reading down considerably and will, therefore, most certainly be rejected by blind people as soon as ink-printing abolishes this characterization and the blind hear about it. So, we will probably be able to print each book in African languages for a few years only. This can be important for the size of the edition and also for the binding.

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Furthermore, we have to ask ourselves: On what material shall we produce Braille? On foil? That is the ready

solution, because, as you know, it is then sufficient to produce a Braille transcript on paper and make copies from it. This can be done with a relatively inexpensive machine and without a lot of know-how, provided you get a good Braille transcript. But on days when it is very hot or humid, as is more often the case in Africa than in Europe and North America, reading from foil is almost impossible. I experienced this just recently in Togo when a friend of mine from Nigeria gave me a magazine which had been produced there on thermo-form. So let us print on paper! But for this, at least up to a few years ago, we needed a stereotyper and a press. Both are expensive and complicated and, in addition, need occasional servicing. Moreover, to operate these machines, we need technical know-how and intuition, and to run a Braille press effectively, we need well-trained stereotypists and careful proof-readers.It is not a matter of course to have all this, but needs a long period of gradual development. It is easy to install a new press and run it productively in a country in which Braille has been printed for decades. But this is much more difficult in Africa.

Modern technology could open new avenues for us. In Togo, for example, the Wycliff Bible Translaters intend trying, in the near future, to print tribal-language texts, which they have computerized for the sighted, directly on paper in Braille. We hope that, for this purpose, the additional use of a quick-printer, like that of Thiel or Resus, will be sufficient. But this is only an idea, so far.

As Europeans, we are accustomed to Contracted Braille. We can read and write it quicker than Uncontracted Braille, and it needs less space. But are these advantages so great that we should encourage Africans to develop Contracted Braille systems, as well? If African blind people want to have access to English and French literature, they have to learn English Braille gr. 2 or Abrégé Orthographique and even Abrégé Orthographique Etendu. So, we should spare them an additional Contracted Braille system of their own, as long as they do not ask for it themselves. Incidentally, this complies with computer usage; for it is obviously much easier and

cheaper to bring out computerized ink-print in Uncontracted Braille instead of in Contracted Braille. Numeral and diacritical signs will make for enough difficulties, anyway.

And lastly: How can we put the books that the blind would like to read at their disposal? As a rule, they do not have enough space for storing books of their own. Most of them live in more cramped surroundings than we do. So, it is useless to give them books to keep. Therefore, it is perhaps even more important to install Braille lending libraries in Africa than in Europe and North America. But, as far as I know, there are only very few in existence. What could we do to remedy this? In a small school for the blind in Togo, I have found recently a relatively well-equipped library with Braille books from France. In the same way, a Braille lending library could be installed in the capital of each African country in which there are already alphabetized blind people, at first equipped with books in English or French, and gradually with the addition of self-made books. In this connection two further questions can, of course, be raised: Does the mentality of the people allow the conclusion that borrowed books will be sent back undamaged and in the appropriate time, and is there already a national library association or a municipal lending library which would be prepared and in a position to install and run a Braille department, as well? An answer to these questions can only be found through a questionnaire to all respective library associations. From my experience, the final results of such a questionnaire would only be available after a longer period of waiting and reminders. But perhaps we could make a start in Zimbabwe. For this purpose, let me draw your attention to the so-called Mapota Declaration no. 1, adopted by the National Executive Committee of the Zimbabwe National League of the Blind on Jan. 15th, 1985. There, you can read in Resolution 5: "There is a serious need for reading material for the visually impaired people in the country. Therefore, we of the Zimbabwe National League, resolve that there be a national library for the blind which should be created and financed by the Government, Council for the Blind, Royal Commonwealth Society for the Blind, Swedish Federation of the Visually Handicapped and the

Commonwealth Foundation". So, you can see that in Zimbabwe, at least, there is a real need for a central Braille lending library.

I would like to have presented you with more facts. But it is not easy to get information from African Braille presses. I was therefore only able to develop ideas and to raise questions. But I hope I have at least, in this way, sensibilized you to the huge task which is lying before us in Africa. So, I would like to close by asking all of you heartily to help me fulfill this task.

IFLA COUNCIL 1983

SECTION OF LIBRARIES FOR THE BLIND

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NEW TECHNOLOGIES FOR THE BLIND READING COMMUNITY

by

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NEW TECHNOLOGIES FOR THE BLIND READING COMMUNITY

By Paul E. Thiele

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One of the persistent challenges which has motivated developers, engineers and inventors, is making books and other printed materials available to the blind and sight-impaired.

Librarians, school teachers and other professionals who are responsible for the provision of reading materials either for educational or leisure use of the blind, have had a particularly vexing problem. While the basic format of the print book has remained virtually the same, since the invention of the Gutemberg Press, books for the blind have changed many times and each time rather dramatically. Each change has brought about the need for a new vehicle to contain the book, such as the switch from recorded talking books on discs or reel tapes to the compact cassette in the 1970's. These changes often bring about a need for a secondary technology, such as new and different playback equipment which is required to accommodate the change. Most of the changes in format of books for the blind and the accompanying new technologies, also require extensive changes in the way the blind reading community uses the new material, often involving the learning of new skills, extensive training and changes of attitudes and preferences. In a sense, what makes matters worse, is that changes in the technologies and methodologies, are usually not universal; often two, three and more systems must exist side by side, challenging not only the blind reader into mastering several, often unrelated skills just to accomplish one task, - reading, - but perplexing librarians and other custodians of special collections, who are faced with reorganizing methods of storage, circulation and shipping.

Part of the diversity of formats in reading materials for the blind, as opposed to the virtual uniformity in print for the sighted, is due to the former being a relatively new form of communication, which is less than 100 years old. The second component is the diverse make-up of the user group, who are often being mistaken as being homogeneous, but whose widely divergent visual accuities, bring about a number of responses to the task of 'reading' which is far more diverse than that of the seeing public. Very likely the most important reason however, is that as yet there is no perfect or near-perfect substitute or surrogate reading method for the blind. Each method, from braille, recorded talking books, and of late, electronic conversions from print to tactile impressions, braille and synthesized speech, have as many drawbacks as advantages. Thus, researchers and inventors are still challenged into finding a way of bringing print to the blind which requires less of a struggle, is less slow, less skill-oriented, and less costly, than anything which the impressive progress in the field, has brought about so far.

All of this brings a particular challenge to the professional librarian, educator or specialist/book facilitator, who have embraced the task of serving the non print reader with some trepidation, but generally with a great deal of enthusiasm. As the professional nature of both the service and the personnel improves and moves from special agencies and collections into the mainstream of public and educational librarianship, it is a credit to the profession, that librarians and book facilitators whose training and backgrounds have been primarily print-oriented, are willing to learn and adapt.

The following will be a brief, personal and very cursary description, evaluation and critique of the newest technologies for the blind reading community and some speculation on what the future will bring.

In general, while research and development has formerly concentrated on the manual, mechanical and electric conversion of print into alternate format 'books' i.e. into braille, and recorded

talking books, the trend in the past fifteen years, has been primarily in the development of methods of accessing regular print materials. Thus, while there are some very new and innovative developments in the production and formats of talking books and a general renaissance in braille materials, this paper will devote more emphasis on new technologies, which provide instant translation of print materials. These new technologies fall into three genera. categories, - 1) optical to tactile conversion of print; 2) optical to braille conversion and 3) optical to speech. In an earlier paper we referred to the fact that any library or book collection can be accessible to the blind, as long as someone can be found to read the books and materials to those unable to read ordinary print. New technology is well on its way, to revise that statement so that in the not too distant future, any collection of print materials may be made accessible directly to the blind, with the aid of one or more aids or devices.

Writing about the new technologies from a North American perspective, for the I.F.L.A. Library Section for the Blind, makes one all too aware of the inequity of services. While we will be discussing $30,000 computers which instantly 'read' books, some member nations do not yet have adequate collections of basic materials. On the other hand, many formerly under-developed nations are becoming developing countries, and their library and education systems are in a position and may be tempted to acquire some of the newest technologies for the blind. This paper will hopefully contribute to the evaluation and decision-making process.

TALKING BOOKS

The recorded talking book has become the universal medium for the blind. The recording of a single or multiple voices, 'narrating'[1] the text of a book, preserved electronically for later and repeated use, is closest to the 'nearly perfect' format for the blind. The process requires only few skills on the part of the user; listening skills and ability to manipulate a playback device. Talking books appeal to the widest segment of the target group, from children to seniors; from congenitally sight-impaired persons to the newly blind, for whom they are often the first aspect of a 'rehabilitative' process. They are used by those near the 'legal limits' of visual impairment - in many countries measured at 20/200 acuity in the better eye with best possible correction. Depending on copyright arrangements, talking books can also serve persons with neural or psychological reading disfunctions (dyslexia), the illiterate and even persons who wish to read and do other manual or visual activities such as driving a car or doing housework. In practice, however, the latter extension is rare, and usually entails books and materials recorded by other than traditional talking book producers for the blind.

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[1] Narrating is an inadequate term, but it is used widely to distinguish the process of recording a book and the activity of listening to it; surveys have shown that the visually impaired prefer the term 'reading' for the latter process. Thus a 'narrator' is the person voicing the talking book; a 'reader' is the user.

Although the drawbacks to talking books are mostly on the psychological level, they are serious ones. Users are subjected to an interpretation, as the narrator imposes an interpretation into the original text, no matter how impartial the reading style is. Although research is scant in this area, there is concern on the part of educators and psychologiests that congenitally blind persons never develop and adventitiously blind lose certain cognitive and interpretive abilities, if they are nurtured only on talking books. Talking books do not reinforce spelling, and structure. There are some forms of written communications, especially in the sciences and mathematics, which simply cannot be verbalized. Especially for students, there are some materials - formulas, computer programming and advanced calculations, - which cannot be recorded.

New Developments

Most talking books are contained on commercial compact tape cassettes (formerly called Phillips Standard Cassettes). For some years now, blind readers in several countries have been served with an American development, - the extended play, four track cassette; a standard commercial cassette, with a non-standard playback speed of 15/16 ips and four single tracks of recording. Playback of a standard 60 minute tape is extended to four hours; 90 minute cassette to six hours. The main drawback of this system is that playback equipment is virtually limited to non-commercially manufactured and specially commissioned machines, which are expensive ($165 - 250 U.S.) and less than state-of-the-art, since there is lettle competition or incentive among the manufacturers.

Voice Indexing

One of the most dramatic break-throughs since the invention of the electronic recording process which is at the core of talking book production, is the development of Voice Indexing. It is simply a means of placing audio 'book marks' onto a recorded talking book to make random or programmed access to the material possible. One of the greatest limits of the talking book has been the difficulty or near

impossibility of finding a specific page, entry or section. This has led to the production mostly of talking books such as novels, which are 'read' from beginning to end, with comparatively little production of reference or non-narrative materials. An earlier system of 'tone indexing' with 50 or 60 cycle beep tones, which are inaudible at normal tape speed, but become distinct signals in the 'forward' or rewind mode, was not satisfactory, since it requires a great deal of counting and concentration by the user.

Technical advances have been made recently, which makes it possible to record the human voice at ultra low frequencies, which are inaudible at normal playback speeds, but can be heard clearly in the fast forward and rewind modes.

Three systems are currently under development. Library of Congress/National Library Service for the Blind and the American Printing House for the Blind in the U.S. have developed a system which employs unused portion of a four track tape, and in which the voice-indexing must be added after the original narration. The Royal National Institute for the Blind, Great Britain, is reporting the development of a system. The most advanced and practical system so far was developed recently at the University of British Columbia, Vancouver, Canada, by Andre van Schyndel, a doctoral student in Physics.

The Van Schyndel Voice Indexer employs digital electronics to convert the voice of the narrator to an ultra low frequency and taps directly into the recording head of a tape recorder - reel or cassette - to calibrate the speed of the passing tape, and to expand the ultra low signal accordingly. At normal tape speed, the voice index is completely inaudible; in the fast-forward mode the index is clear and distinct from the rest of the 'noise' as the tape passes over the playback head. The process becomes even better if a playback device is used which is fitted with a high frequency filter, which suppresses the 'babble' of the regular recording at high speed and emphasizes the spoken book marks.

Moreover, voice-indexing is accomplished by the narrator, during the recording process and on the same track, by simply pushing a button, on a device the size of a stereo receiver, which is an added component in the recording process.

The Van Schyndel Voice Indexer, which is internationally patented and now commercially manufactured by a Vancouver firm, and retails for approximately $2,100 CDN per unit, can be used to create talking dictionaries, encyclopaedias, cook books and various other types of reference materials which were impractical before. It can produce student textbooks, in which the user has quick and precise access to specific pages or sections and it can produce narrative material, which is uninterrupted by page numbers and other periphera at normal speeds, but which contains this information essential for student use in the higher speed search modes. The process can also be used to produce vocal bookmarks retroactively onto previously recorded materials.

Mr. Van Schyndel has won international recognition with his invention. He has received the Marconi International Young Scientist Award as well as several other medals and honours. Experimentation is now being designed by this writer, which will test response to voice indexing by various age and experience groups in the blind reading community.

Future developments

The talking book will undoubtedly continue to play a major role as a format of bringing books to the blind. Experimentation is now going on at Crane Library, U.B.C. using commercial micro-cassettes. These 5 x 3 x 0.5 cm. cassettes presently have a playback capacity of 60 minutes each and a high reliability and audio fidelity factor. Although these micro-cassettes and the related playback equipment is presently more expensive than standard tapes and players, further development and popularization of this medium could result in lower prices, dramatic increase in library storage capacity, decreases in

mailing costs and a 'format' which the user could carry in shirt pocket or small purse.

With the advances in digital electronics and the lowering costs of micro-processors, it is not inconceivablethat a form of talking book could be produced on which entire long works such as 'War and Peace' or the Bible could be contained on one single unit. The process might consist of transferring the recorded voice of the narrator into bits of digital information, stored on a single audio cassette or magnetic disc. This information is loaded in a matter of minutes onto a player equipped with micro processor and storage capacity, which simply restores the electronic signals into a human voice and real time. The higher costs of the playback devices would well be offset, by dramatic reduction in the number and size of storage devices, and the motorized mechanical process in cassette recorders and players, could be virtually eliminated.

BRAILLE

The system of six tactile dots invented by Louis Braille in 1829, but which did not become the standard method of tactile writing in english-speaking countries until 1932, continues to be in a state of flux. In essence, the "War of the Dots"[2] is still on. Organizations like the National Braille Association in North America and similar bodies in Britain, France and Germany, continue to alter and expand braille, specifically published braille, which is printed in a shorthand or contracted version. On the one hand, these changes are attempts to refine the system and to accommodate new complexities in communication; on the other, they are a hardship on the user. Braille is enjoying a renaissance in many countries, largely brought about by special education teachers, who feel that it offers the only viable alternate to reading and writing. Many North American special education authorities also feel that braille reinforces spelling and word structure.

However, since the trend is to an early use of highly contracted braille, there is every likelihood that users learn to consider contractions as units rather than representations of specific letters. Thus the

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[2] Irving, Robert R., The War of the Dots, New York, American Foundation for the Blind, 1970. A most interesting history of the tempestuous and fervent struggle to develop standard braille into the acceptable format of tactile writing for the blind.

spelling and word structure reinforcement of braille is questionable.

Although paper-bound braille is very important to those who command it well, the disadvantages of the 'language' are numberous. Bulk, expense, complexity, a keen sense of touch and tactile discrimination, and the fact that numbers, punctuation, symbols and musical notation are composed of the basic braille alphabet with complicated series of prefixes and suffixes, explain why only an estimated 3 - 5% of the blind reading community ever master braille. The development of contractions does increase reading speed and saves valuable paper resources, but due to the system's limitations, contractions are vastly different for each language. Thus the sharing of braille books becomes difficult on an international basis and even in bi - and multilingual countries like Canada, Belgium and Switzerland, very few braille users can read more than one language in contracted form.

New Developments

One of the most promising innovations in the production of braille, is also one of the most under-developed at present.

Paperless braille is achieved by changing standard braille characters into digital information which is stored on magnetic discs or cassettes. A simple, uncomplicated playback device should feature an electro-mechanical braille display of several characters or several lines which the braille user reads in much the same manner as paper braille. Paperless braille contained on standard audio cassettes, can be readily and inexpensively produced at this time. The advantages are many. A standard cassette may contain the equivalent of up to 900 paper braille pages. Reproduction, storage and shipping are a great deal less expensive than conventional bound braille and braille cassettes can be recycled. Although early tests of the process indicate some resistance by users to the need for a playback device and to the mechanical display, - it simply isn't as comfortable to curl up with a machine as with a braille book, - this is balanced by the greater availability of material, specifically textbooks and magazine publication.

In reality, no simple, inexpensive digital cassette playback device is as yet available. The VERSABRAILLE, manufactured by Telesensory Systems of California and the BRAILLINK of Clarke & Smith of Great Britain, and newcomers Triformations MICROBRAILLER and Cranmer - Perkins units, both developed and manufactured in the U.S., are elaborate devices, more suitable as braille terminals for computers. Their price from approximately $4,000. for the Cranmer - Perkins to over $10,000. for the BRAILLINK makes these units unsuitable as dedicated 'read only' devices. Installation of these units in public or education libraries would be more as braille word processing and information storage devices than as a means of accessing cassette braille books.

The obvious conclusion is that simple, inexpensive, compact, light-weight dedicated apparatus to accommodate cassette braille 'books' only, is very much overdue.

PRINT CONVERSION TECHNOLOGY

One of the most encouraging signs in the challenge of providing books for the blind, is the trend toward development of devices which instantly translate print into a medium which the sight-impaired can use. These devices, if they become accepted, would reduce considerably the need for special materials and dedicated, exclusive 'languages'. From the user's point of view, these machines would equalize the recreational and cultural opportunities of the blind, by eliminating the long and frustrating wait for print materials to be 'transcribed' and would close the gap between the vast choice and variety of materials available to the print-reading public versus the relatively limited choice and small amount available to the blind.

The challenges are daunting. There are in excess of 4,000 print styles in use currently which the human eye can adjust to and decipher with ease. Letters, numbers, punctuation, symbols, musical notation, etc. are all easily distinguished by the eye and given the appropriate response by the brain. But recognizing these via mechanical means and assigning values or decisions electronically, is a formidable task.

Two basic approaches were developed; devices which translate print into tactile stimuli and apparatus which translate into audible formats, including synthesized computer speech.

OPTICAL TO TACTILE CONVERSION

One of the most simple and straight forward approaches to making print accessible to the blind is to convert letters to tactile symbols. Experimentation and devices in this field go back to 1880.[3] However, two Stanford University (California) electrical engineers, Drs. John Linwill and James Bliss, developed the most practical and so far most successful system. The OPTACON consists of a small hand held camera containing a photo electric cell connected to a base unit the size of a small cassette machine, with an array of vibrating pins. The reader scans a print page with the camera in one hand, while placing a finger of the other hand onto the display. Letters are being formed on the fingertip, as a mobile and pleasantly prickling sensation. Reading speeds range from 50 - 100 words per minute. The instrument has been commercially manufactured and sold by Telesensory Systems Inc. of Mountainview California, which has also developed an impressive teaching support program and a number of accessories which permit the monitoring of typing and computer video terminals.

The beauty of the system is that it relies most heavily on the

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[3] The Grin 'Tactilator' - a french development which converted an optical projection of letters into crude patterns of electrical currents, from which the blind were to deduce the actual letters.

skills of the user and is therefore the least mechanized of all. The user is required to learn the motor skills for correct scanning of the print page and is taught a process of shape, letter, word, word cluster and sentence recognition, which is very similar to the teaching of basic reading skills. Optacon users can read different languages and to some extent even different alphabets such as greek, hebrew, and russian. A recent article even reported success in the recognition of printed musical notation.

Future Development

While the OPTACON remains the foremost system of direct access to print, the device is virtually unchanged since its introduction in 1971. In terms of advancements in micro circuit and related electronics, that makes it an anachronism in its own time.

A number of improvements are highly overdue, and one hopes that either Telesensory Systems or another company will develop them. An OPTACON which can be operated with one hand, - in which the vibrating array is located on the back of the scanner, would perhaps be the greatest single improvement. This one handed unit could still be connected via a cord to a separate conversion and amplifying unit if necessary. The present two-handed approach is cumbersome and in many ways may contribute to the relatively low reading speeds of the users. Although there is no concrete data on the subject, it appears that the present process, consisting of motor skills and accurate tracking of the print page with one hand, while receiving the tactile images with the other, creates a long and confusing process of information intake. This may be further complicated as the brain is expected to correlate information from the left and the right side. Increasing the size of the vibrating array, so that a progression of letters occurs across two or three fingers, may also increase reading capacity, since it similates the process of visual reading. Another future development should be the removal of the annoying buzz created by the vibrating pins. The sound was originally believed to be a reinforcement for the blind user,

indicating that a line of print has been located. In practice however, the buzzing is at a pitch and volume which becomes very annoying to the user and others within range. One final improvement would be a lowering of the nearly $6,000 U.S. price of the unit. One is at a loss to explain that while other similar electronic devices have come down considerably in price over the past ten years, due largely to decreases in micro-circuit costs, the OPTACON has nearly doubled in price.

The OPTACON may not be an ideal library acquisition. Its best use is as a personal instrument, very dependant on constant reinforcement through use. It might be considered for multiple use in a library setting if there is evidence that blind patrons have completed the fifty hour training course or there is someone available to provide the course. Although some blind users have reported reading whole books with the device, it is most used for reading of short materials such as articles or chapters of books. Blind patrons with their own personal OPTACONS should be given complete access to print materials and reference work should be conducted on the same basis as with print readers. The use of the device does not damage books and most OPTACON users will be familiar with book-related tools such as indexes, card catalogues, tables of content, etc.

OPTICAL TO SPEECH OUTPUT

The most sophisticated and mind-boggling approach to the provision of instant access to print, is found in the KURZWEIL READING MACHINE. The device, manufactured by the Kurzweil Computer Company of Cambridge, Mass. is a highly complex computer which turns print into synthesized speech of extra-ordinary quality and clarity. The unit consists of three parts; a scanner and print recognizer, a computer which assembles the information from the first unit and produces the speech and a separate 38 key operating pad with speaker, which is connected to the main units by an extension cord. The KRM is about the size of a small desktop office copier; its price, - approximately $30,000 U.S.

The KRM was developed in the early 1970's by computer engineer Raymond Kurzweil in conjunction with the Massachussetts Institute of Technology. The print recognizer consists of a complex and closely calibrated mechanical horizontal and vertical plotter fitted with a photo electric camera. A page of print or a book is placed, facing downward onto a glass plate, much like material on a copier. The mechanical tracking process automatically searches out the lines of print and scans back and forth. Using a geographic approach to print recognition, the newest KRM III now virtually handles every print style, except those with high degrees of embellishment and serifs. The

information from the scanning unit is fed to the computing unit below, where letter clusters are compared to a dictionary of pronounciations and a large volume of standard exceptions. The result is programmed phonetically to a bank of available sounds, which in turn are enunciated with a computer-generated voice, complete with a number of inflections. The KRM is presently only available with english pronounciation, but work is underway in West Germany apparently for programs to produce other languages.

The machine is programmed with a large number of vocal responses, which tell the blind user what it is doing (such as "searching for the first line"), where it is at, what it will do next and what commands it expects from the user. The keyboard offers controls which all but simulate the scanning process of the human eye, making it possible to advance, repeat, spell, slow down or speed up the speech output. There is even a purely 'cosmetic' feature with which the user can select a number of voice pitches, from a persuasive, confidential bass, to the intonations of a harranguing preacher. The unit has a memory of approximately one page, which is automatically loaded and dumped, and used for retrospective reference and for a number of modes such as spelling words, enunciating punctuation, etc. The degree of 'user-friendliness' is exemplary; and even makes decisions such as "looks like a picture" after it has scanned graphic material which is not print. The KRM III is also a sophisticated pronouncing calculator which can handle calculation of university calibre with ease.

Because its high price tag makes individual ownership unlikely, the KRM has been largely marketed to eduational and public libraries for multiple user operation. Yet with all of its sophistication and features dedicated to the needs of the blind user, there are a number of drawbacks. The user must undergo a thorough training session to learn to command the machine via the complex key board. Kurzweil's approach has been to train librarians and educators at the factory, at the expense of the purchasing institution. The training program is not as thorough and educationally sound as Telesenory System's and with the

high rate of turn-over in the library and teaching profession, there is a problem of having qualified personnel on hand to teach blind patrons. The machine appeals primarily to young, computer oriented blind persons; it tends to confuse the elderly or those not familiar with programming processes. Although it is possible to read entire books with it, its prime use is most likely for short materials and as a supplement to other reading technologies rather than a substitute for any. The greatest drawback is that the machine takes some time to 'learn' to pronounce new materials. Passages which are unfamiliar or new print styles not previously 'seen', will produce long sessions of nonsense, much to the frustration of users who have developed expectations that the KRM will handle short term reading quickly. Although the keyboard offers a great degree of scanning flexibility, many blind users have reported frustrations with the relative slowness and complexity of the process. Some have expressed the wish for a hand held scanning device but a three year experiment by Telesensory to produce a speech output similar to the KRM in conjunction with the OPTACON, has apparently been suspended for the present.

Future Development

It seems almost inappropriate to speculate about future development of the KRM when the machine represents the present state of computer art. But miniaturization and portability would be very desirable improvements as would obviously be a lowering of price to permit individual ownership. Another, very necessary improvement would be the replacement of the most vulnerable part of the machine, the mechanical scanner with a non-moving electronic curser, which might be accomplished with the transfer of optical into electronic print.

PRINT TO BRAILLE CONVERSION

A device which instantly translates print into braille does not actually exist at present. There are however several units manufactured which translate electronic print (such as the print on a computer display screen) into contracted braille. Machines like the afore-mentioned VERSABRAILLE, BRAILLELINK, MICROBRAILLER and CRANMER are programmed to take output from a computer and translate it instantly to contracted braille which may be printed for permanent record or used immediately with the electro-mechanical braille displays of each of these machines.

From a library vantage, these units are useful less for 'reading' as for conversion, storage and arrangement of any computer-contained information such as on-line library catalogues, public information devices or data bases. It is not inconceivable that a device may be developed in the near future, which will convert print into braille and give braille users instant access to print books. The technology is in place; it remains to be assembled into a working entity.

PRINT VIA THE AIR WAVES

Although it doesn't quite fit into the concept of print conversion, and the process is not entirely new, a very brief discussion of radio reading services is nevertheless in order.

About 170 libraries, community or non-profit groups in the U.S., and one such organization in Canada, operate broadcasting stations which broadcast talking books, journal articles or readings of newspapers. The radio reading service is usually operated on a restricted access channel on the FM or ultra short wave band, and requires specially tuned receivers for the broadcasts to be heard. On the FM or ultra short band, broadcasting operations are usually assigned fairly wide frequencies which can be further subdivided into sub-carrier channels. Many of these are in commercial use as taxi radio dispatching services, wireless background music systems and other controlled dissemination. Most radio reading services in North America operate on sub-carrier channels, using the transmitting and antenna facilities of an established broadcasting operation. This eliminates the high capital and start-up costs a separate broadcasting station, requiring only a studio set up and a number of special receivers. The major reason for the controlled access channel is to protect copyright materials such as books from being heard by the general public, and the issuane of special receivers to blind or print handicapped persons completes the controls.

Radio reading services appeal most to home bound blind persons, since long hours of continuous listening are required to fully appreciate the programming. Many of the services combine broadcasts of talking books with community information, readings of store advertisements (supplements to newspapers) and some provide a great deal of programming by the blind themselves, such as telephone programs and broadcasts of events.

Radio reading services were initially aimed at becoming substitutes for talking book circulation from libraries. The North American experience however seems to be that they encourage talking book circulation, as listeners hear parts of books which interest them and want to order these for their individual use.

In developing countries, the use of radio reading services may well serve as a less expensive alternative to talking book circulation, and libraries are encouraged to look into the possibilities.

OPTICAL PRINT ENLARGEMENT

All of the foregoing technologies are aimed at the part of the blind population with insufficient eyesight to handle visual reading of ordinary print. The vast majority of blind persons however have some residual or transitional visual acuity, which makes reading of normal print possible, provided magnification, brightness and control levels can be achieved which penetrate the barriers of reduced acuity. The devices which the partially sighted use, range from simple eyeglasses and hand held optical magnifiers to complex electronic magnification devices, enlarging normal print up to forty times. The most popular of these devices use the principle of closed circuit television. A television camera, with low light lens is aimed at a page of printed material, and the image is displayed on a high resolution (more lines to the cm.) television screen. The user manipulates a zoom lens to adjust the focus and the size of print, until individual letters fill the whole screen. The higher the magnification level, the smaller the amount of material projected on the screen, requiring the user to develop good motor skills to move the print material manually, or in some models manipulating an X/Y table in others. Many public and education libraries or schools have purchased CCTV magnifying devices from the more than a dozen commercially manufactured models for multiple use. Some patrons have purchased their own since the price range is between $900 - $2,500.

The newest development in print enlargement devices is the Warmald VIEWSCAN, which does not use television principles. It consists of a display screen with a neon matrix of thousands of glowing dots. These dots are activated by a hand-held camera, fitted with a photo electric cell, which the user scans across the page, much like with the OPTACON. Letters appear on the flat, portable screen, much like images on a liquid crystal (non light-emitting) display. The size, thickness and intensity of the letters can be varied considerably, and the image can be negative (light letters on a dark background) or positive (dark images on light). The device displays only about 3 - 4 letters at a time, but reading rates about the same as the OPTACON (50 - 90 words per minute) can be achieved with good scanning skills. The device can be operated on batteries, which makes it portable and thus ideal as a library or school aid, since it permits the partially seeing user access to card catalogues, shelf numbers, book spine printing, etc. The biggest drawback, is the machine's $4,100 U.S. price.

Future Development

The close circuit television magnifiers will be improved considerably in the near future due to the development of the flat picture tube by SONY and other japanese companies. Equally, the miniaturization of television cameras, will make it possible to produce a CCTV magnifyer with the scanning features and portability of a VIEWSCAN and the accurate reproduction and light emmitting qualities of a television screen. This device would appeal to the greatest number of partially seeing readers, since many of them must rely on the strong internal light emitting features of a television tube to penetrate clouded lenses or overcome central vision loss.

CONCLUSION

The on-going development of new technologies for the blind and sight-impaired has good and bad aspects. For the professional charged with programming reading services for the visually impaired either in a dedicated special setting or in public or education libraries and institutions, almost every new technology requires new methodology in administering, circulating, storing, packaging and dissemination. Every change requires large outlays of capital and continuing financial support. At the beginning of this paper, I complimented librarians, information science and education personnel on their positive attitudes and willingness to adapt. But I would be more than remiss not to point out and compliment the tremendous adaptability of the blind and partially-sighted themselves. Each new technology is accomplished by them at tremendous costs of learning, new skills, adapting new methods and devising new approaches. Many accomplished blind readers command several technologies, switching with ease from talking book to braille, tactile print and computer-generated speech. The perfect reading technology for the largest number of blind people has obviously not yet been developed, - although the talking book comes close as being the most widely accepted. But the fact that the blind are coping with the many methods of accessing information and ready to embrace new technologies as they are developed, should demonstrate clearly their tremendous desire to read.